

# SONY®

DIGITAL CAMERA

## XCL Series



XCL-U1000  
XCL-U1000C  
XCL-V500  
XCL-X700

## FEATURES

### XCL-U1000

Black and White Digital Video Camera

### XCL-U1000C

Color Digital Video Camera

#### High-resolution image capture

- UXGA image (1,600 x 1,200 pixels) captures video at 15 fps

#### 1/1.8-type progressive scanning CCD with square pixels

#### Effective picture element

- 1,628(H) x 1,236(V)

#### High sensitivity

- 400 lx at F 5.6 (XCL-U1000)
- 2,000 lx at F8 (XCL-U1000C)

#### Camera Link standard conformity

#### Monitor output

#### Compact and lightweight

- 2 1/4 (W) x 1 3/4 (H) x 3 3/4 (D) inches (56 x 44 x 95 mm), 9 oz (250 g)

#### External trigger shutter

- 1/15 to 1/10,000 s

#### C-mount lens

#### Partial scanning

#### Binning function (XCL-U1000)

#### White balance (XCL-U1000C)

- Auto/Manual/Preset selectable

#### Matrix function for accurate color reproduction (XCL-U1000C)

#### High shock and vibration resistance

### XCL-V500

Black and White Digital Video Camera

### XCL-X700

Black and White Digital Video Camera

#### High-rate scanning

- VGA image (648 x 494 pixels) captures video at 60 fps (XCL-V500)
- XGA image (1,024 x 768 pixels) captures video at 30 fps (XCL-X700)

#### 1/3-type progressive scanning CCD with square pixels

#### Effective picture element

- 659(H) x 494(V) (XCL-V500)
- 1034(H) x 779(V) (XCL-X700)

#### High sensitivity

- 400 lx at F 5.6

#### Camera Link standard conformity

#### Compact and lightweight

- 1 3/16 (W) x 1 3/16 x (H) 1 3/16 (D) inches (29 x 29 x 30 mm), 2 oz (55 g)

#### External trigger shutter

- 1/4 to 1/100,000 s

#### Synchronization signal

- Internal/external (HD/VD)

#### C-mount lens

#### Partial scanning

#### Binning function

#### High shock and vibration resistance



Sony's new XCL Series features four cameras equipped with a digital video interface that conforms to the Camera Link® industry standard. These new cameras enable the capture of high-speed, high-resolution images while simplifying connectivity to machine-vision systems with its 3M MDR 26-pin cable.

The XCL-U1000 and XCL-U1000C cameras incorporate a 1/1.8-type progressive scan CCD that produces detailed, UXGA resolution images (1,600 x 1,200 pixels). In addition, the XCL-U1000C camera uses a CCD with a color "mask" (commonly called a "Bayer filter") and a DSP to provide uncompressed, high resolution, digital color images and a direct VGA display output option.

The XCL-V500 and XCL-X700 cameras feature a 1/3-type progressive scan CCD that captures high-quality monochrome images at a high frame rate, designed in a compact and lightweight body.

All models incorporate a variety of convenient features such as partial scan and external trigger function allowing for the clear capture of fast moving objects or still images in low light environments.

Combining high resolution, high performance, compact design and a wide range of feature-rich functions, Sony's XCL Series are the ideal solution for today's wide range of machine vision applications.

## XCL-U1000/XCL-U1000C

Mode	Binning (XLC-U1000 only)	High-Rate (Partial Scan)	Ext. Trigger
Normal (Free Run)	Yes	No	No
Trigger	Yes	Yes	Yes

Control functions	Description
Operating mode	Normal/Trigger
Shutter speed	Normal
	1 – 1/10000
	Trigger
	Internal setting: 1/15 – 1/10000
	Setting by trigger pulse width
Gain	0 to +18 dB
Binning function	OFF/ON
Partial Scan function	OFF/ON
Detail	OFF/ON
External trigger input	26-pin connector / DC-700 / 700CE
White balance (XCL-U1000C only)	Preset/Manual/AWB
Matrix (XCL-U1000C only)	OFF/ON

## XCL-V500/XCL-X700

Mode	Binning	High-Rate 1 (Partial Scan)	High-Rate 2 (Partial Scan)	Ext. Trigger	Ext. Sync	Ext. Clock*
Normal (Free Run)	Yes	No	No	No	Yes	Yes
Trigger 1	Yes	Yes	No	Yes	Yes	Yes
Trigger 2	Yes	No	Yes	Yes	Only HD	Yes
Restart/ Reset	Yes	Yes	No	No	Yes	Yes

Control functions	Description
Operating mode	Normal/Restart reset/trigger mode 1/trigger mode2
Shutter speed	Normal
	XCL-V7000: OFF (1/60) – 1/30000
Trigger	Internal Setting: OFF (the same as above – 1/10000)
	Setting by trigger pulse width
Gain	0 to +18 dB
Binning function	OFF/ON
High-rate Scan function	OFF/ON
HD/VD signal I/O signal output	External sync signal input / Internal sync
External trigger input	26-pin connector / DC-700 / 700CE
75Ω termination	OFF/ON
Master clock	Internal / External

\* XCL-V500: 24.5 MHz Min., 49 MHz Max. / XCL-X700: 29.5 MHz Min., 59 MHz Max.

# SPECIFICATIONS

	XCL-U1000	XCL-U1000C	XCL-V500	XCL-X700
Image device	1/1.8-type PS IT CCD		1/3-type PS IT CCD	
Effective picture elements (HxV)	1628 x 1236		659 x 494	1034 x 779
Output image size	1,600 x 1,200 pixels		648 x 494 pixels	1,024 x 768 pixels
Cell size	4.4 x 4.4 μm (H/V)		7.4 x 7.4 μm (H/V)	4.65 x 4.65 μm (H/V)
Sensitivity	400 lx at F5.6	2000 lx at F8	400 lx at F5.6	
Sync system	Internal		Internal/External (HD/VD)	
Lens mount			C mount	
Frame rate	15 fps		60 fps	30 fps
Output data clock	36 MHz		24.55 MHz 29.5 MHz	
Gain			0 to +18 dB	
Gamma	ON/1 (fixed)		1 (fixed)	
Trigger shutter	1/15 to 1/100,000 s		1/4 to 1/100,000 s	
Partial scan			Vertical ON/OFF	
Bining	Vertical +2Line	—	Vertical +2Line	
Minimum illumination	2 lx or less	4 lx or less	1 lx	
Video output	Digital (Camera Link conformity)	Digital (Camera Link conformity)	Digital (Camera Link conformity)	
	10 bit	RGB 24 bit	10 bit	
Detail	ON/OFF		—	
Matrix	—	ON/OFF	—	
White balance	—	Pre-set, Manual, AWB	—	
Power requirements			DC12 V	
Power consumption	5.5 W or less		2.0 W or less	2.2 W or less
Dimensions (WxHxD)	1 3/4 x 2 1/4 x 3 3/4 inches (44 x 56 x 95 mm)		1 3/16 x 1 3/16 x 1 3/16 inches (29 x 29 x 30 mm)	
Weight	9 oz (250 g)		2 oz ( 55 g)	
Operating temperature			-5 to 45°C (23 to 113°F)	
Storage temperature			-30 to 60°C (-22 to 140°F)	
Operating humidity			20 to 80 % (no condensation)	
Storage humidity			20 to 95 % (no condensation)	
Vibration resistance			10 G (20 Hz to 200 Hz)	
Shock resistance			70 G	
Supplied accessories			Lens mount cap (1), Operating instructions (1)	

## XCL-U1000/XCL-U1000C

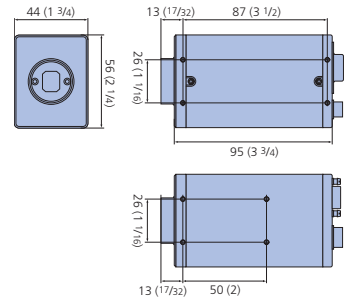
Pin No.	Pin No.	Pin No.
1 GND	1 R output	1 TXD
2 +12V DC	2 G output	2 RXD
3 GND	3 B output	3 GND
4 NC	4 NC	4 NC
5 GND	5 GND	5 NC
6 NC	6 GND	6 NC
7 NC	7 GND	
8 GND	8 GND	
9 NC	9 NC	
10 Exposure pulse output	10 GND	
11 Trigger pulse input	11 NC	
12 GND	12 NC	
	13 HD output	
	14 VD output	
	15 NC	

## XCL-U1000/XCL-U1000C/XCL-V500/XCL-X700

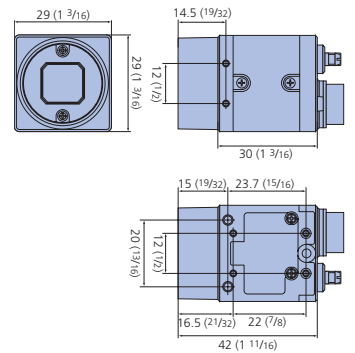
Pin No.	Pin No.
1 INNER_SHIELD	14 INNER_SHIELD
2 X0-output(signal)	15 X0+output(signal)
3 X1-output(signal)	16 X1+output(signal)
4 X2-output(signal)	17 X2+output(signal)
5 XCLK-output(signal)	18 XCLK+output(signal)
6 X3-output(signal)	19 X3+output(signal)
7 SerTC+(signal)	20 SerTC-(signal)
8 SerTFG+(signal)	21 SerTFG-(signal)
9 CC1 TRIG-input(signal)	22 TRIG+input(signal)
10 CC2 HD-(+)input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)	23 HD(-)input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)
11 CC3 VD(-)input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)	24 VD(+)-input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)
12 CC4 CLOCK(+)-input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)	25 CLOCK(-)input (signal) (XCL-V500/X700), NC (XCL-U1000/U1000C)
13 INNER_SHIELD	26 INNER_SHIELD

## DIMENSIONS

### XCL-U1000 XCL-U1000C



### XCL-V500 XCL-X700

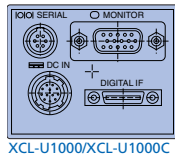


Unit: mm (inches)

## XCL-V500/XCL-X700

### 12-pin connector

Pin No.	Re-Start/Re-Set	External Trigger Shutter	Pin No.	Camera Sync Signal Output	Pin No.	External Sync Mode (HD/VD)
1	GND	GND	1	GND	1	GND
2	+12V DC	+12V DC	2	+12V DC	2	+12V DC
3	—	—	3	—	3	—
4	CLOCK(+)-input(signal)	CLOCK(+)-input(signal)	4	CLOCK(+)-input(signal)	4	CLOCK(+)-input(signal)
5	HD input(GND)	HD input(GND)	5	HD output(GND)	5	HD input(GND)
6	HD input(signal)	HD input(signal)	6	HD output(signal)	6	HD input(signal)
7	RE-SET	VD input(signal)	7	VD output(signal)	7	VD input(signal)
8	—	—	8	—	8	—
9	CLOCK(-)input(signal)	CLOCK(-)input(signal)	9	CLOCK(-)input(signal)	9	CLOCK(-)input(signal)
10	—	WEN output(signal)	10	—	10	—
11	—	Trigger pulse input(signal)	11	—	11	—
12	RE-SET(GND)	VD input(GND)	12	VD output(GND)	12	VD Input(GND)



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